

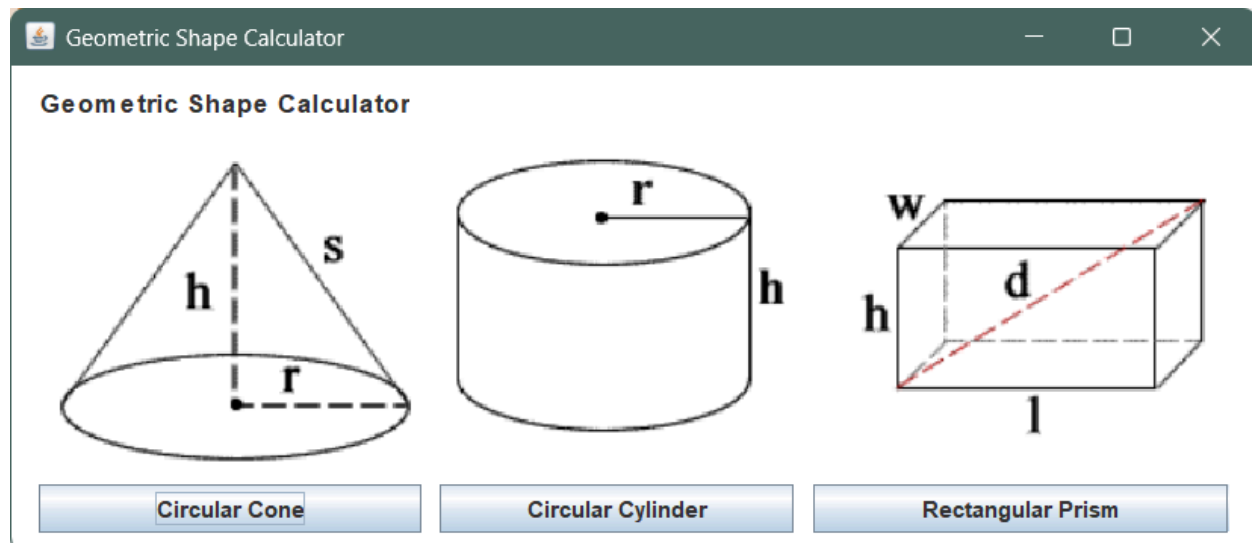
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Lab #10

ฝึกการใช้ GUI และ JAR

Question #1

1. จาก Java Project ชื่อว่า *GeometricShapeCalculator* ในเนื้อหาช่วงบรรยาย ให้นิสิตพัฒนาส่วนที่เหลือให้ครบสมบูรณ์
2. สร้าง GUI Form ในรูปทรงส่วนที่เหลือให้ครบถ้วน ได้แก่ Circular Cylinder และ Rectangular Prism โดยในส่วนของ Sub Form ทั้ง 2 นั้นให้ออกแบบได้ตามสะดวก



คำตอบ #1

Source Code

```

Project Files ▾
  GeometricShapes D:\6621601174\70
    .idea
    out
    src
      it
        util
          shapes
      .gitignore
      GeometricShapes.iml

GeometricShapes.java  CircularCone.java  CircularCylinder.java  RectangularPrism.java

1 package it.util.shapes;
2
3 public interface GeometricShapes { 3 usages 3 implementations
4     public double getVolume(); no usages 3 implementations
5     public double getTotalSurfaceArea(); no usages 3 implementations
6 }
7

```

```

Project Files ▾
  GeometricShapes D:\6621601174\70
    .idea
    out
    src
      it
        util
          shapes
      .gitignore
      GeometricShapes.iml

GeometricShapes.java  CircularCone.java  CircularCylinder.java  RectangularPrism.java

1 package it.util.shapes;
2
3 public class CircularCone implements GeometricShapes { no usages
4     private double radius; 11 usages
5     private double height; 7 usages
6
7     public CircularCone(double r, double h) { no usages
8         this.radius = r;
9         this.height = h;
10    }
11
12    @Override no usages
13    public double getVolume() {
14        double v = ((double) 1/3) * Math.PI * radius * radius * height;
15        return v;
16    }
17
18    @Override no usages
19    public double getTotalSurfaceArea() {
20        double t = getLateralSurfaceArea() + getBaseSurfaceArea();
21        return t;
22    }
23
24    public double getLateralSurfaceArea() { 1 usage
25        double l = Math.PI * radius * Math.sqrt((radius * radius) + (height * height));
26        return l;
27    }
28
29    public double getBaseSurfaceArea() { 1 usage
30        double b = Math.PI * radius * radius;
31        return b;
32    }
33
34    public double getSlantHeight() { no usages
35        double s = Math.sqrt((radius * radius) + (height * height));
36        return s;
37    }
38
39    public double getRadius() { no usages
40        return this.radius;
41    }
42
43    public double getHeight() { no usages
44        return this.height;
45    }
46

```

Project Files

GeometricShapes

D:\6621601174\70

.idea

out

src

it

util

shapes

.gitignore

GeometricShapes.iml

GeometricShapes.java

CircularCone.java

CircularCylinder.java

RectangularPrism.java

```

1 package it.util.shapes;
2
3 public class CircularCylinder implements GeometricShapes { no usages
4     private double radius; 9 usages
5     private double height; 4 usages
6
7     public CircularCylinder(double r, double h) { no usages
8         this.radius = r;
9         this.height = h;
10    }
11
12    @Override no usages
13    public double getVolume() {
14        double v = Math.PI * radius * radius * height;
15        return v;
16    }
17
18    @Override no usages
19    public double getTotalSurfaceArea() {
20        double ts = getLateralSurfaceArea() + getTopSurfaceArea() + getBottomSurfaceArea();
21        return ts;
22    }
23
24    public double getLateralSurfaceArea() { 1 usage
25        double l = 2 * Math.PI * radius * height;
26        return l;
27    }
28
29    public double getTopSurfaceArea() { 1 usage
30        double t = Math.PI * radius * radius;
31        return t;
32    }
33
34    public double getBottomSurfaceArea() { 1 usage
35        double b = Math.PI * radius * radius;
36        return b;
37    }
38
39    public double getRadius() { no usages
40        return this.radius;
41    }
42
43    public double getHeight() { no usages
44        return this.height;
45    }
46
47    }

```

Project Files

GeometricShapes

D:\6621601174\70

.idea

out

src

it

util

shapes

.gitignore

GeometricShapes.iml

GeometricShapes.java

CircularCone.java

CircularCylinder.java

RectangularPrism.java

```

1 package it.util.shapes;
2
3 public class RectangularPrism implements GeometricShapes { no usages
4     private double width; 7 usages
5     private double height; 7 usages
6     private double length; 7 usages
7
8     public RectangularPrism(double w, double h, double l) { no usages
9         this.width = w;
10        this.height = h;
11        this.length = l;
12    }
13
14    @Override no usages
15    public double getVolume() {
16        double v = length * width * height;
17        return v;
18    }
19
20    @Override no usages
21    public double getTotalSurfaceArea() {
22        double ts = 2 * ((length * width) + (length * height) + (width * height));
23        return ts;
24    }
25
26    public double getDiagonal() { no usages
27        double d = Math.sqrt((length * length) + (width * width) + (height * height));
28        return d;
29    }
30
31    public double getWidth() { no usages
32        return this.width;
33    }
34
35    public double getHeight() { no usages
36        return this.height;
37    }
38
39    public double getLength() { no usages
40        return this.length;
41    }
42
43 }
```

Project Files ▾

- GeometricShapeCalculator D:\66216C
 - .idea
 - out
 - src
 - resources
 - circularcone.png
 - circularcone2.png
 - circularcylinder.png
 - circularcylinder2.png
 - rectangularprism.png
 - rectangularprism2.png
 - CircularConeForm
 - CircularCylinderForm
 - MainForm
 - RectangularPrismForm
 - .gitignore
 - GeometricShapeCalculator.iml

MainForm.java x MainForm.form CircularConeForm.java CircularConeForm.form CircularCylinderForm.java

```
1 import javax.swing.*;
2 import java.awt.*;
3 import java.awt.event.ActionEvent;
4 import java.awt.event.ActionListener;
5 import java.awt.event.MouseAdapter;
6 import java.awt.event.MouseEvent;
7
8 public class MainForm extends JFrame {
9     private JPanel mainPanel; 2 usages
10    private JLabel circularConeLabel; 4 usages
11    private JLabel circularCylinderLabel; 4 usages
12    private JLabel rectangularPrismLabel; 4 usages
13    private JButton circularConeButton; 2 usages
14    private JButton circularCylinderButton; 2 usages
15    private JButton rectangularPrismButton; 2 usages
16
17    public static final String CIRCULARCONE = "CIRCULARCONE"; 3 usages
18    public static final String CIRCULARCYLINDER = "CIRCULARCYLINDER"; 3 usages
19    public static final String RECTANGULARPRISM = "RECTANGULARPRISM"; 3 usages
20
21    public MainForm() { 1 usage
22        initialFormProperties();
23        circularConeLabel.addMouseListener(new MouseAdapter() {
24            @Override
25            public void mouseClicked(MouseEvent e) {
26                openForm(MainForm.CIRCULARCONE);
27            }
28        });
29        circularConeButton.addActionListener(new ActionListener() {
30            @Override
31            public void actionPerformed(ActionEvent e) {
32                openForm(MainForm.CIRCULARCONE);
33            }
34        });
35        circularCylinderLabel.addMouseListener(new MouseAdapter() {
36            @Override
37            public void mouseClicked(MouseEvent e) {
```

Project Files ▾

- GeometricShapeCalculator D:\66216C
 - .idea
 - out
 - src
 - resources
 - circularcone.png
 - circularcone2.png
 - circularcylinder.png
 - circularcylinder2.png
 - rectangularprism.png
 - rectangularprism2.png
 - CircularConeForm
 - CircularCylinderForm
 - MainForm
 - RectangularPrismForm
 - .gitignore
 - GeometricShapeCalculator.iml

```
8 public class MainForm extends JFrame {
21 public MainForm() { 1 usage
35     circularCylinderLabel.addMouseListener(new MouseAdapter() {
36         @Override
37         public void mouseClicked(MouseEvent e) {
38             openForm(MainForm.CIRCULARCYLINDER);
39         }
40     });
41     circularCylinderButton.addActionListener(new ActionListener() {
42         @Override
43         public void actionPerformed(ActionEvent e) {
44             openForm(MainForm.CIRCULARCYLINDER);
45         }
46     });
47     rectangularPrismLabel.addMouseListener(new MouseAdapter() {
48         @Override
49         public void mouseClicked(MouseEvent e) {
50             openForm(MainForm.RECTANGULARPRISM);
51         }
52     });
53     rectangularPrismButton.addActionListener(new ActionListener() {
54         @Override
55         public void actionPerformed(ActionEvent e) {
56             openForm(MainForm.RECTANGULARPRISM);
57         }
58     });
59 }
60
61 @ private void openForm(String formName) { 6 usages
62     switch (formName) {
63         case MainForm.CIRCULARCONE:
64             CircularConeForm circularConeForm = new CircularConeForm();
65             circularConeForm.show();
66             break;
67         case MainForm.CIRCULARCYLINDER:
68             CircularCylinderForm circularCylinderForm = new CircularCylinderForm();
69             circularCylinderForm.show();
```

```

Project Files
  GeometricShapeCalculator
    .idea
    out
    src
      resources
        circularcone.png
        circularcone2.png
        circularcylinder.png
        circularcylinder2.png
        rectangularprism.png
        rectangularprism2.png
      CircularConeForm
      CircularCylinderForm
      MainForm
      RectangularPrismForm
    .gitignore
    GeometricShapeCalculator.iml

MainForm.java
8 public class MainForm extends JFrame {
61 @ private void openForm(String formName) { 6 usages
62     switch (formName) {
63         case MainForm.CIRCULARCONE:
64             CircularConeForm circularConeForm = new CircularConeForm();
65             circularConeForm.show();
66             break;
67         case MainForm.CIRCULARCYLINDER:
68             CircularCylinderForm circularCylinderForm = new CircularCylinderForm();
69             circularCylinderForm.show();
70             break;
71         case MainForm.RECTANGULARPRISM:
72             RectangularPrismForm rectangularPrismForm = new RectangularPrismForm();
73             rectangularPrismForm.show();
74             break;
75     }
76 }
77
78 private void displayError(String msg) { 1 usage
79     JOptionPane.showMessageDialog(null, msg, "Error", JOptionPane.ERROR_MESSAGE);
80 }
81
82 private void initialFormProperties() { 1 usage
83     try {
84         circularConeLabel.setIcon(new ImageIcon(this.getClass().getResource("/resources/circularcone.png")));
85         circularCylinderLabel.setIcon(new ImageIcon(this.getClass().getResource("/resources/circularcylinder.png")));
86         rectangularPrismLabel.setIcon(new ImageIcon(this.getClass().getResource("/resources/rectangularprism.png")));
87         // set cursor hover on images
88         circularConeLabel.setCursor(Cursor.getPredefinedCursor(Cursor.HAND_CURSOR));
89         circularCylinderLabel.setCursor(Cursor.getPredefinedCursor(Cursor.HAND_CURSOR));
90         rectangularPrismLabel.setCursor(Cursor.getPredefinedCursor(Cursor.HAND_CURSOR));
91     } catch (Exception e) {
92         displayError(e.getMessage());
93         System.exit(1);
94     }
95 }
96

```

```

Project Files
  GeometricShapeCalculator
    .idea
    out
    src
      resources
        circularcone.png
        circularcone2.png
        circularcylinder.png
        circularcylinder2.png
        rectangularprism.png
        rectangularprism2.png
      CircularConeForm
      CircularCylinderForm
      MainForm
      RectangularPrismForm
    .gitignore
    GeometricShapeCalculator.iml

MainForm.java
8 public class MainForm extends JFrame {
61 @ private void openForm(String formName) { 6 usages
62     switch (formName) {
63         case MainForm.CIRCULARCONE:
64             CircularConeForm circularConeForm = new CircularConeForm();
65             circularConeForm.show();
66             break;
67         case MainForm.CIRCULARCYLINDER:
68             CircularCylinderForm circularCylinderForm = new CircularCylinderForm();
69             circularCylinderForm.show();
70             break;
71         case MainForm.RECTANGULARPRISM:
72             RectangularPrismForm rectangularPrismForm = new RectangularPrismForm();
73             rectangularPrismForm.show();
74             break;
75     }
76 }
77
78 private void displayError(String msg) { 1 usage
79     JOptionPane.showMessageDialog(null, msg, "Error", JOptionPane.ERROR_MESSAGE);
80 }
81
82 private void initialFormProperties() { 1 usage
83     try {
84         circularConeLabel.setIcon(new ImageIcon(this.getClass().getResource("/resources/circularcone.png")));
85         circularCylinderLabel.setIcon(new ImageIcon(this.getClass().getResource("/resources/circularcylinder.png")));
86         rectangularPrismLabel.setIcon(new ImageIcon(this.getClass().getResource("/resources/rectangularprism.png")));
87         // set cursor hover on images
88         circularConeLabel.setCursor(Cursor.getPredefinedCursor(Cursor.HAND_CURSOR));
89         circularCylinderLabel.setCursor(Cursor.getPredefinedCursor(Cursor.HAND_CURSOR));
90         rectangularPrismLabel.setCursor(Cursor.getPredefinedCursor(Cursor.HAND_CURSOR));
91     } catch (Exception e) {
92         displayError(e.getMessage());
93         System.exit(1);
94     }
95 }
96
97 public static void main(String[] args) {
98     MainForm mainForm = new MainForm();
99     mainForm.setTitle("Geometric Shape Calculator");
100     mainForm.setContentPane(mainForm.mainPanel);
101     mainForm.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
102     mainForm.pack();
103     mainForm.setVisible(true);
104 }
105 }
106

```

```

Project Files
  GeometricShapeCalculator D:\66216C
    .idea
    out
    src
      resources
        circularcone.png
        circularcone2.png
        circularcylinder.png
        circularcylinder2.png
        rectangularprism.png
        rectangularprism2.png
      CircularConeForm
      CircularCylinderForm
      MainForm
      RectangularPrismForm
      .gitignore
      GeometricShapeCalculator.iml

MainForm.java  MainForm.form  CircularConeForm.java  CircularConeForm.form  CircularCylinderForm.java  CircularCylinderForm.form

1  import it.util.shapes.CircularCone;
2  import javax.swing.*;
3  import java.awt.*;
4  import java.awt.event.ActionEvent;
5  import java.awt.event.ActionListener;
6
7  public class CircularConeForm { 4 usages
8      private JLabel circularConeLabel; 2 usages
9      private JTextField textRadius; 2 usages
10     private JTextField textHeight; 2 usages
11     private JButton calculateButton; 2 usages
12     private JButton closeButton; 2 usages
13     private JPanel circularConePanel; 2 usages
14
15     private JDialog frame; 7 usages
16
17     public CircularConeForm() { 1 usage
18         circularConeLabel.setIcon(new ImageIcon(this.getClass().getResource("/resources/circularcone2.png")));
19         frame = new JDialog((Frame) null, "Circular Cone Shape Area", true);
20         frame.setContentPane(circularConePanel);
21         frame.pack();
22         frame.setDefaultCloseOperation(WindowConstants.DISPOSE_ON_CLOSE);
23         closeButton.addActionListener(new ActionListener() {
24             @Override public void actionPerformed(ActionEvent e) {
25                 dispose();
26             }
27         });
28         calculateButton.addActionListener(new ActionListener() {
29             @Override public void actionPerformed(ActionEvent e) {
30                 doCalculate();
31             }
32         });
33     }
34
35     public void show() { 1 usage
36         frame.setVisible(true);
37     }

```

```

Project Files
  GeometricShapeCalculator D:\66216C
    .idea
    out
    src
      resources
        circularcone.png
        circularcone2.png
        circularcylinder.png
        circularcylinder2.png
        rectangularprism.png
        rectangularprism2.png
      CircularConeForm
      CircularCylinderForm
      MainForm
      RectangularPrismForm
      .gitignore
      GeometricShapeCalculator.iml

MainForm.java  MainForm.form  CircularConeForm.java  CircularConeForm.form  CircularCylinderForm.java  CircularCylinderForm.form  RectangularPrismForm.java  RectangularPrismForm.form

7  public class CircularConeForm { 4 usages
17     public CircularConeForm() { 1 usage
18         calculateButton.addActionListener(new ActionListener() {
19             @Override public void actionPerformed(ActionEvent e) {
20                 doCalculate();
21             }
22         });
23     }
24
25     public void show() { 1 usage
26         frame.setVisible(true);
27     }
28
29     public void dispose() { 1 usage
30         frame.setVisible(false);
31         frame.dispose();
32     }
33
34     public void doCalculate() { 1 usage
35         try {
36             CircularCone cc = new CircularCone(Double.parseDouble(textRadius.getText()),
37                 Double.parseDouble(textHeight.getText()));
38             double volume = cc.getVolume();
39             double slantHeight = cc.getSlantHeight(); // call calculate slant method for relative shape in JAR
40             double totalSurfaceArea = cc.getTotalSurfaceArea();
41             String result = "Volume = " + volume + "\n" + "Slant Height = " + slantHeight + "\n" + "Total Surface Area = " + totalSurfaceArea;
42             displayResult(result, "Result of Circular Cone Shape", JOptionPane.INFORMATION_MESSAGE);
43         } catch (NumberFormatException err) {
44             displayResult("Result of Circular Cone Shape", "Please input number only!!", JOptionPane.INFORMATION_MESSAGE);
45         }
46     }
47
48     public void displayResult(String resultMsg, String title, int type) { 2 usages
49         JOptionPane.showMessageDialog(null, resultMsg, title, type);
50     }
51 }

```



```

Project Files
  GeometricShapeCalculator D:\66216C
    .idea
    out
    src
      resources
        circularcone.png
        circularcone2.png
        circularcylinder.png
        circularcylinder2.png
        rectangularprism.png
        rectangularprism2.png
      CircularConeForm
      CircularCylinderForm
      MainForm
      RectangularPrismForm
    .gitignore
    GeometricShapeCalculator.iml

MainForm.java
MainForm.form
CircularConeForm.java
CircularConeForm.form
CircularCylinderForm.java
CircularCylinderForm.form

2  import it.util.shapes.CircularCylinder;
3  import javax.swing.*;
4  import java.awt.*;
5  import java.awt.event.ActionEvent;
6  import java.awt.event.ActionListener;
7
8  public class CircularCylinderForm { 4 usages
9  private JLabel circularCylinderLabel; 2 usages
10 private JTextField textRadius; 2 usages
11 private JTextField textHeight; 2 usages
12 private JButton calculateButton; 2 usages
13 private JButton closeButton; 2 usages
14 private JPanel circularCylinderPanel; 2 usages
15
16 private JDialog frame; 7 usages
17
18 public CircularCylinderForm() { 1 usage
19     circularCylinderLabel.setIcon(new ImageIcon(this.getClass().getResource("/resources/circularcylinder2.png")));
20     frame = new JDialog((Frame) null, "Circular Cylinder Shape Area", true);
21     frame.setContentPane(circularCylinderPanel);
22     frame.pack();
23     frame.setDefaultCloseOperation(WindowConstants.DISPOSE_ON_CLOSE);
24     closeButton.addActionListener(new ActionListener() {
25         @Override
26         public void actionPerformed(ActionEvent e) {
27             dispose();
28         }
29     });
30     calculateButton.addActionListener(new ActionListener() {
31         @Override
32         public void actionPerformed(ActionEvent e) {
33             doCalculate();
34         }
35     });
36 }
37
38 public void show() { 1 usage

```

```

Project Files
  GeometricShapeCalculator D:\66216C
    .idea
    out
    src
      resources
        circularcone.png
        circularcone2.png
        circularcylinder.png
        circularcylinder2.png
        rectangularprism.png
        rectangularprism2.png
      CircularConeForm
      CircularCylinderForm
      MainForm
      RectangularPrismForm
    .gitignore
    GeometricShapeCalculator.iml

MainForm.java
MainForm.form
CircularConeForm.java
CircularConeForm.form
CircularCylinderForm.java
CircularCylinderForm.form
RectangularPrismForm.java
RectangularPrismForm.form

8  public class CircularCylinderForm { 4 usages
18 public CircularCylinderForm() { 1 usage
30     calculateButton.addActionListener(new ActionListener() {
31         @Override
32         public void actionPerformed(ActionEvent e) {
33             doCalculate();
34         }
35     });
36 }
37
38 public void show() { 1 usage
39     frame.setVisible(true);
40 }
41
42 public void dispose() { 1 usage
43     frame.setVisible(false);
44     frame.dispose();
45 }
46
47 public void doCalculate() { 1 usage
48     try {
49         CircularCylinder cc = new CircularCylinder(Double.parseDouble(textRadius.getText()),
50             Double.parseDouble(textHeight.getText()));
51         double volume = cc.getVolume();
52         double lateralSurfaceArea = cc.getLateralSurfaceArea(); // call calculate slant method for relative shape in JAR
53         double totalSurfaceArea = cc.getTotalSurfaceArea();
54         String result = "Volume = " + volume + "\n" + "Lateral Surface Area = " + lateralSurfaceArea + "\n" + "Total Surface Area = " + totalSurfaceArea;
55         displayResult(result, "Result of Circular Cone Shape", JOptionPane.INFORMATION_MESSAGE);
56     } catch (NumberFormatException err) {
57         displayResult("Please input number only!!", "Result of Circular Cone Shape", JOptionPane.INFORMATION_MESSAGE);
58     }
59 }
60
61 public void displayResult(String resultMsg, String title, int type) { 2 usages
62     JOptionPane.showMessageDialog(null, resultMsg, title, type);
63 }
64 }
65

```

```

Project Files
  GeometricShapeCalculator D:\66216C
    > .idea
    > .out
    > src
      resources
        circularcone.png
        circularcone2.png
        circularcylinder.png
        circularcylinder2.png
        rectangularprism.png
        rectangularprism2.png
      CircularConeForm
      CircularCylinderForm
      MainForm
      RectangularPrismForm
      .gitignore
      GeometricShapeCalculator.iml

MainForm.java
  2 import it.util.shapes.RectangularPrism;
  3 import java.awt.*;
  4 import java.awt.event.ActionEvent;
  5 import java.awt.event.ActionListener;
  6 import javax.swing.*;
  7
  8 public class RectangularPrismForm { 4 usages
  9     private JButton calculateButton; 2 usages
 10     private JButton closeButton; 2 usages
 11     private JLabel RectangularPrismLabel; 2 usages
 12     private JTextField textLength; 2 usages
 13     private JTextField textWidth; 2 usages
 14     private JTextField textHeight; 2 usages
 15     private JPanel rectangularPrismPanel; 2 usages
 16
 17     private JDialog frame; 7 usages
 18
 19     public RectangularPrismForm() { 1 usage
 20         RectangularPrismLabel.setIcon(new ImageIcon(this.getClass().getResource("/resources/rectangularprism2.png")));
 21         frame = new JDialog((Frame) null, "Circular Cone Shape Area", true);
 22         frame.setContentPane(rectangularPrismPanel);
 23         frame.pack();
 24         frame.setDefaultCloseOperation(WindowConstants.DISPOSE_ON_CLOSE);
 25         closeButton.addActionListener(new ActionListener() {
 26             @Override public void actionPerformed(ActionEvent e) {
 27                 dispose();
 28             }
 29         });
 30         calculateButton.addActionListener(new ActionListener() {
 31             @Override
 32             public void actionPerformed(ActionEvent e) {
 33                 doCalculate();
 34             }
 35         });
 36     }
 37
 38     public void show() { 1 usage

```

```

Project Files
  GeometricShapeCalculator D:\66216C
    > .idea
    > .out
    > src
      resources
        circularcone.png
        circularcone2.png
        circularcylinder.png
        circularcylinder2.png
        rectangularprism.png
        rectangularprism2.png
      CircularConeForm
      CircularCylinderForm
      MainForm
      RectangularPrismForm
      .gitignore
      GeometricShapeCalculator.iml

MainForm.java
  8 public class RectangularPrismForm { 4 usages
 19     public RectangularPrismForm() { 1 usage
 30         calculateButton.addActionListener(new ActionListener() {
 34             }
 35         });
 36     }
 37
 38     public void show() { 1 usage
 39         frame.setVisible(true);
 40     }
 41     public void dispose() { 1 usage
 42         frame.setVisible(false);
 43         frame.dispose();
 44     }
 45     public void doCalculate() { 1 usage
 46         try {
 47             RectangularPrism rp = new RectangularPrism(Double.parseDouble(textLength.getText()), Double.parseDouble(textWidth.getText()),
 48                 Double.parseDouble(textHeight.getText()));
 49             double volume = rp.getVolume();
 50             double diagonal = rp.getDiagonal(); // call calculate slant method for relative shape in JAR
 51             double totalSurfaceArea = rp.getTotalSurfaceArea();
 52             String result = "Volume = " + volume + "\n" + "Diagonal = " + diagonal + "\n" + "Total Surface Area = " + totalSurfaceArea;
 53             displayResult(result, "Result of Circular Cone Shape", JOptionPane.INFORMATION_MESSAGE);
 54         } catch (NumberFormatException err) {
 55             displayResult("Please input number only!!", "Result of Circular Cone Shape", JOptionPane.INFORMATION_MESSAGE);
 56         }
 57     }
 58     public void displayResult(String resultMsg, String title, int type) { 2 usages
 59         JOptionPane.showMessageDialog(null, resultMsg, title, type);
 60     }
 61 }
 62

```

ผลการทำงาน

Geometric Shape Calculator

Circular Cone

Circular Cylinder

Rectangular Prism

Circular Cone Shape Area

Radius: 4

Height: 2

Calculate

Close

Result of Circular Cone Shape

Volume = 33.510321638291124

Slant Height = 4.47213595499958

Total Surface Area = 106.46400030576251

OK

Formulas:

- Volume = $(1/3)\pi r^2 h$
- Slant Height = $\sqrt{r^2 + h^2}$
- Lateral Surface Area = $\pi r s = \pi r \sqrt{r^2 + h^2}$
- Base Surface Area = πr^2
- Total Surface Area = $L + B = \pi r s + \pi r^2 = \pi r (s + r) = \pi r (r + \sqrt{r^2 + h^2})$

Geometric Shape Calculator

Circular Cone Circular Cylinder Rectangular Prism

Result of Circular Cylinder Shape

Volume = 301.59289474462014
Lateral Surface Area = 150.79644737231007
Total Surface Area = 251.32741228718345

Circular Cylinder Shape Area

Volume = $\pi r^2 h$
Lateral Surface Area = $2\pi r h$
Top Surface Area = πr^2
Bottom Surface Area = πr^2
Total Surface Area = $L + T + B = 2\pi r h + 2(\pi r^2) = 2\pi r(h+r)$

Radius: 4
Height: 6
Calculate

Geometric Shape Calculator

Circular Cone Circular Cylinder Rectangular Prism

Result of Rectangular Prism Shape

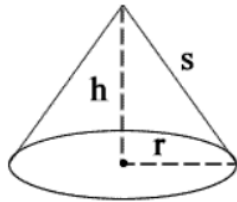
Volume = 40.0
Diagonal = 6.708203932499369
Total Surface Area = 76.0

Rectangular Prism

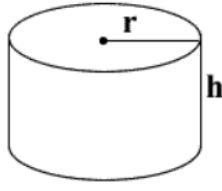
Volume = lwh
Surface Area = $2(lw + lh + wh)$
Diagonal (d) = $\sqrt{l^2 + w^2 + h^2}$

Length: 4
Width: 5
Height: 2
Calculate

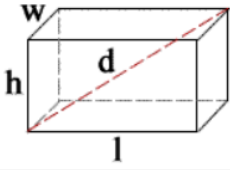
Geometric Shape Calculator



Circular Cone



Circular Cylinder



Rectangular Prism

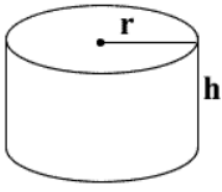
circularcylinder2.png

83

try {

Circular Cylinder Shape Area

Circular Cylinder



Radius

4

Height

number

Calculate

Close

- Volume = $\pi r^2 h$
- Lateral Surface Area = $2\pi r h$
- Top Surface Area = πr^2
- Bottom Surface Area = πr^2
- Total Surface Area
= L + T + B = $2\pi r h + 2(\pi r^2) = 2\pi r(h+r)$

Result of Circular Cylinder Shape

Please input number only!!

OK

CircularConeForm.java

CircularConeFo

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String formName; // classge

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mProperties() { 1 usage

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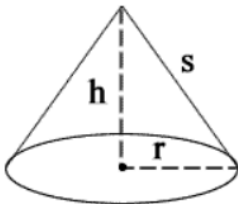
99

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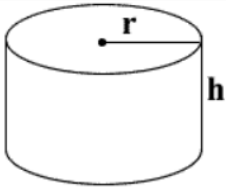
mainForm.setTitle("Geometric Shape Calculator");

mainForm.setContentPane(mainForm.mainPanel);

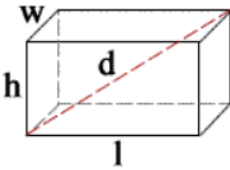
Geometric Shape Calculator



Circular Cone



Circular Cylinder



Rectangular Prism

circularcylinder2.png

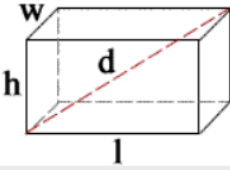
83

try {

Circular Cone Shape Area

Rectangular Prism

- Volume = lwh
- Surface Area = $2(lw + lh + wh)$
- Diagonal (d) = $\sqrt{l^2 + w^2 + h^2}$



Length

num

Width

##

Height

8

Calculate

Close

Result of Rectangular Prism Shape

Please input number only!!

OK

CircularConeForm.java

CircularCone

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mProperties() { 1 usage

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Calculator*");

mainForm.setContentPane(mainForm.mainPanel);